



## *Fourth GAIN World Conference*

Paris, France  
June 14-15, 2000

### **Justifying Safety \$ :**

**Some thoughts on accident statistics and  
accident cost.**

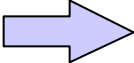
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***Matthias Schmidlin***  
***University of Manchester***

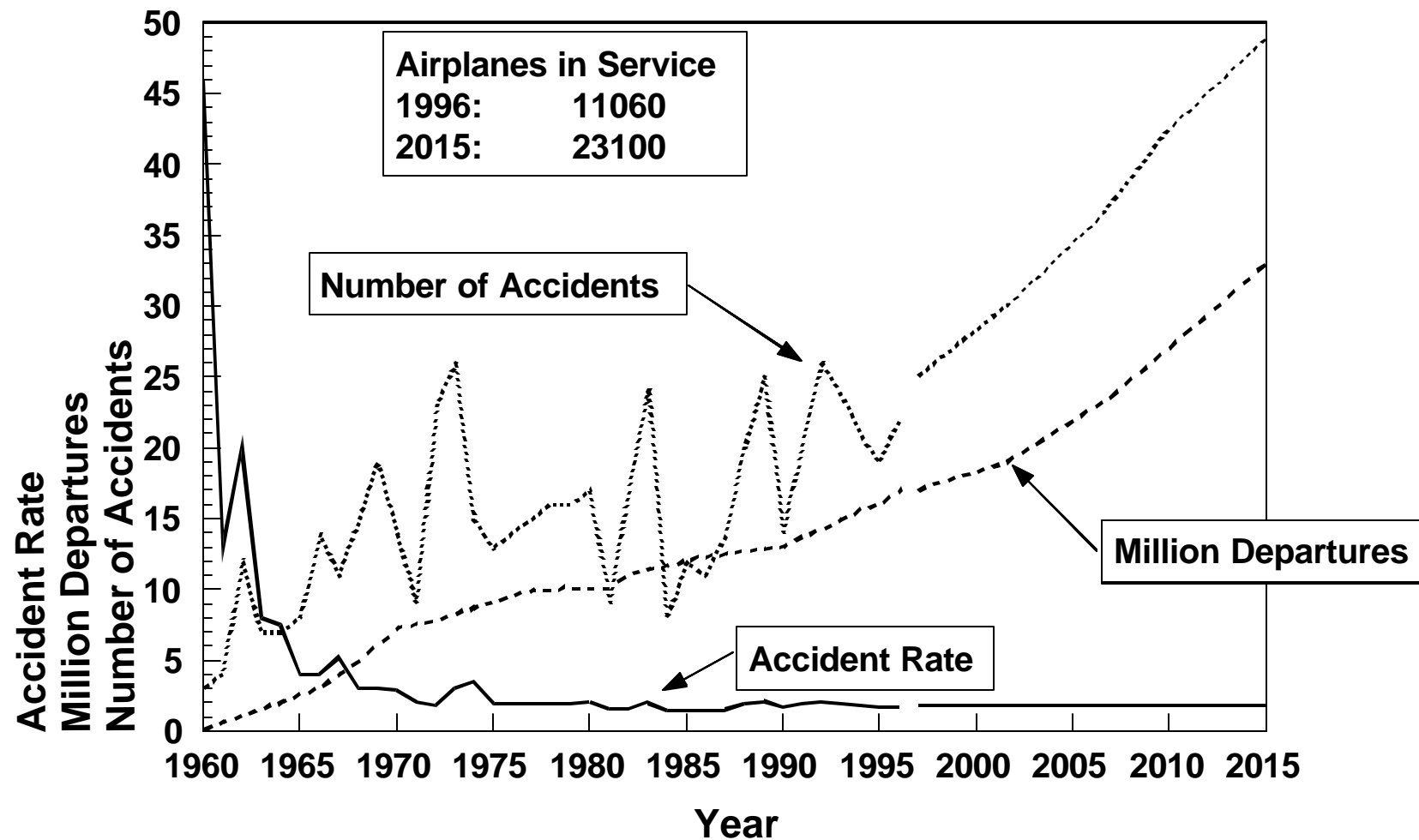
# ***Structure of the Presentation***

**Justifying Safety** 

-  **•Safety Trends & Statistics**
- Accidents and Associated Cost**
- Conclusion**



## *Some thoughts on Safety Statistics*





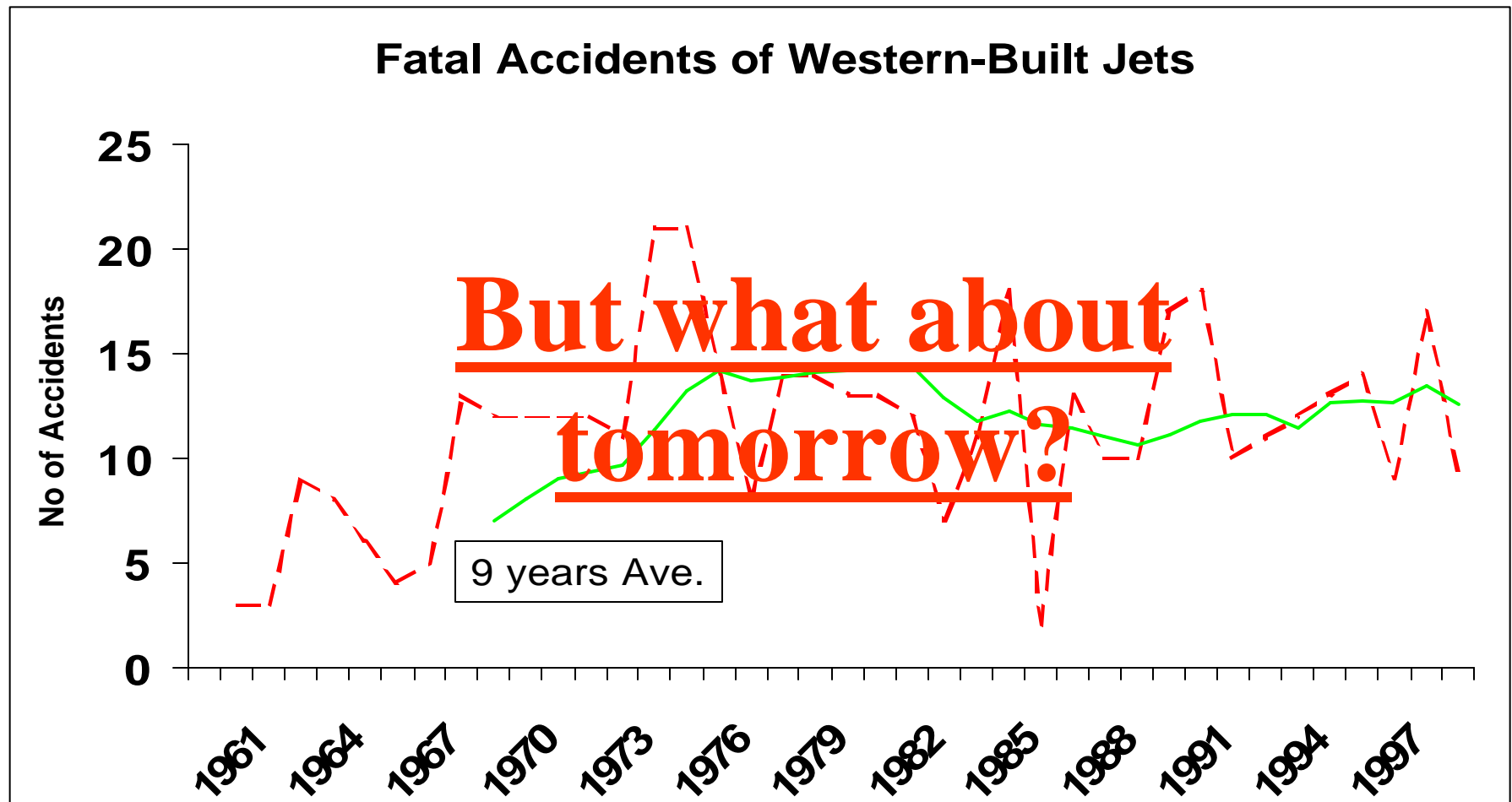
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# ***What is a Hull Loss?***





## Some thoughts on Safety Statistics



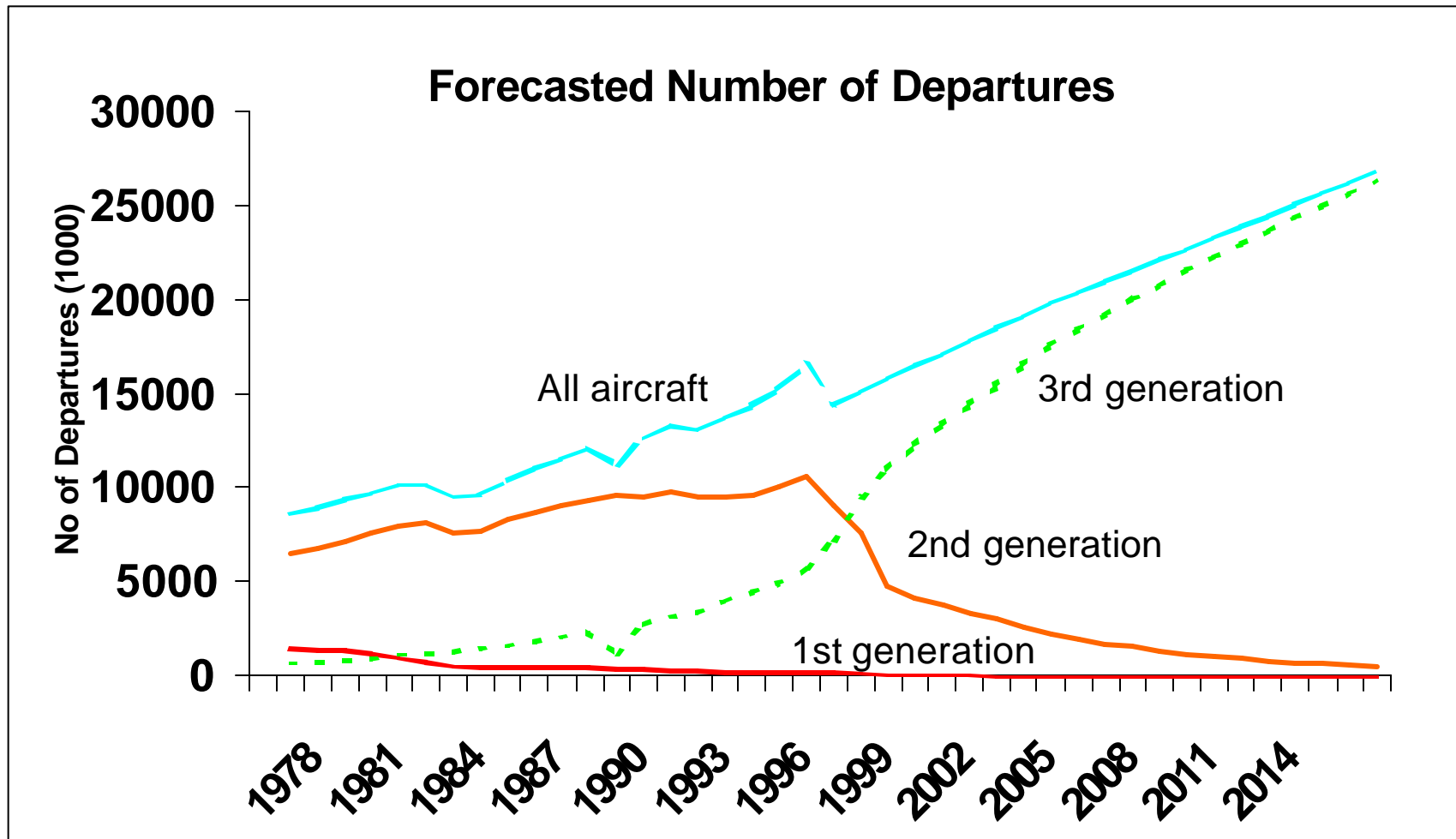


## ***Some thoughts on Safety Statistics***

1 <sup>st</sup> generation	2 <sup>nd</sup> generation		3 <sup>rd</sup> generation	
Aerospatiale Caravelle	A300B4	Fokker 28	A310	B757
BAe Comet	BAe 146	DC-9	A319	B767
B707	BAe (BAC) One-DC-10		A320	MD-80
	Eleven			
DC8	BAe (HS) Trident	L-1011 TriStar	A321	MD-90
	B727		A330	MD-11
	B737-1/200		A340	F 70
			B737-3/4/500	F 100
			B747	

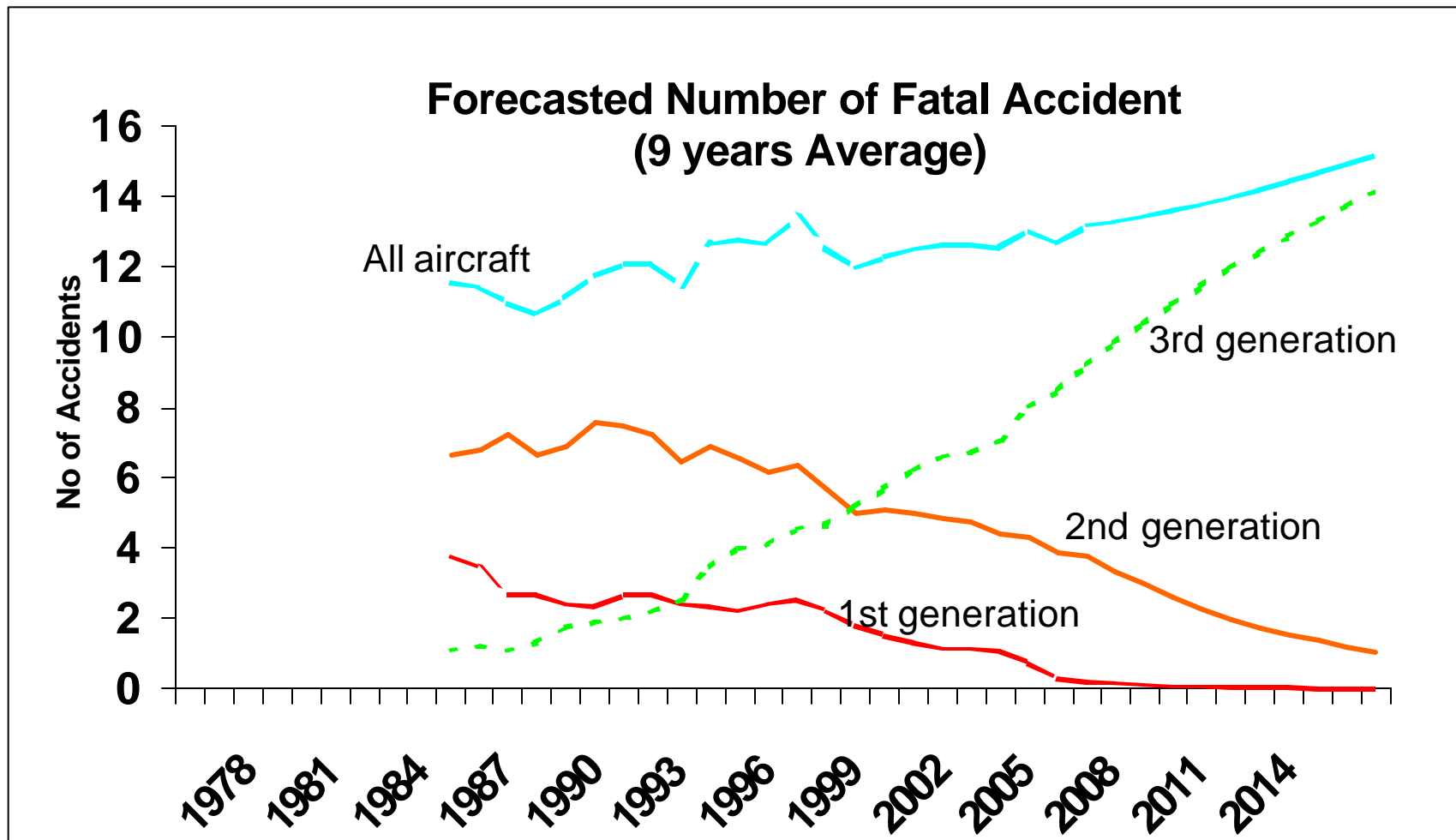


## Some thoughts on Safety Statistics





## Some thoughts on Safety Statistics







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## ***What may a fatal accident look like?-***







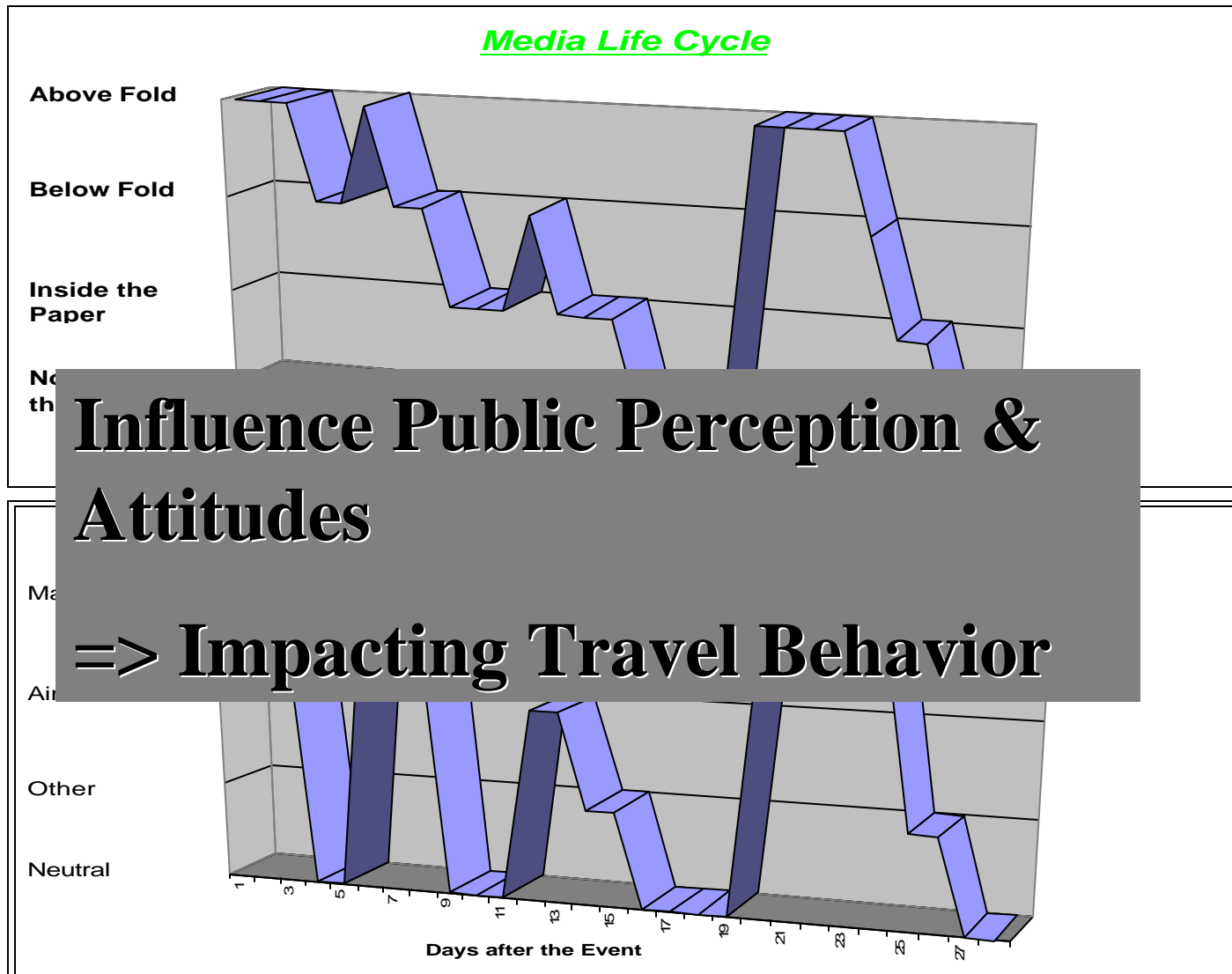
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## ***What may a fatal accident look like?-***





# ***Typical Media Life & Blame Cycle***







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***What are we all most afraid of?***



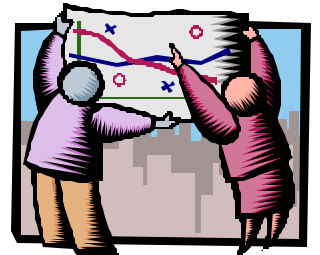




## *Discussion*

- Justifying safety  on Accident Statistic is very critical!

- Small sample size.

- Significant difference in Emotional & Economical terms.



- Benchmarking safety based on the perception of the consumer/ end user  could however be an interesting future way to justify safety 

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## *Attitudes & Perceptions of Air travel*

### Section 5:

I do feel that the level of safety over the last 5 years has

- ☐ Declined      ☒ Remained the same      ☐ Improved

The current number of commercial aviation accidents is:

- ☐ Unacceptable      ☒ A major concern      ☐ Acceptable

What would be an acceptable number of fatal commercial aviation accidents per year?

- ☐ Zero      ☐ 1-5      ☒ 6 - 10      ☐ 10 - 15      ☐ 15 - 20

If aviation safety standards would be raised, I would be prepared to pay a premium of:

- ☐ 0%      ☐ 1-5%      ☐ 5-10%      ☐ 10-15%      ☐ 15-20%      ☐ >20%

# ***Structure of the Presentation***

## **Justifying Safety**

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# ***Accidents and Associated Cost***







## Accidents and Associated Cost

	Total Direct Cost M US\$	Total Indirect Cost M US\$	Cost Distribution
Accident X	350	390	
Accident Y	145	2	
Accident Z	338	15	

**Need for proper  
cost allocation!**



## ***Airline Incurred Cost***

- **Marketing of disaster (Impact on reputation).**
  - **Traveling Public (Airline avoidance).**



## ***Airline Reputation***

- **A recent accident led to an initial drop of 40% of rider-ship, which stabilised at around minus 19% 6 months after the event. On the route on which the accident occurred, the load-factors were still down by 50% six months after event. According the airline's economist, it took close to 1 year to get the traffic back to normal, thereby turning the balance sheet of the airline upside down.**

(Source: Schmidlin & Toft 99)



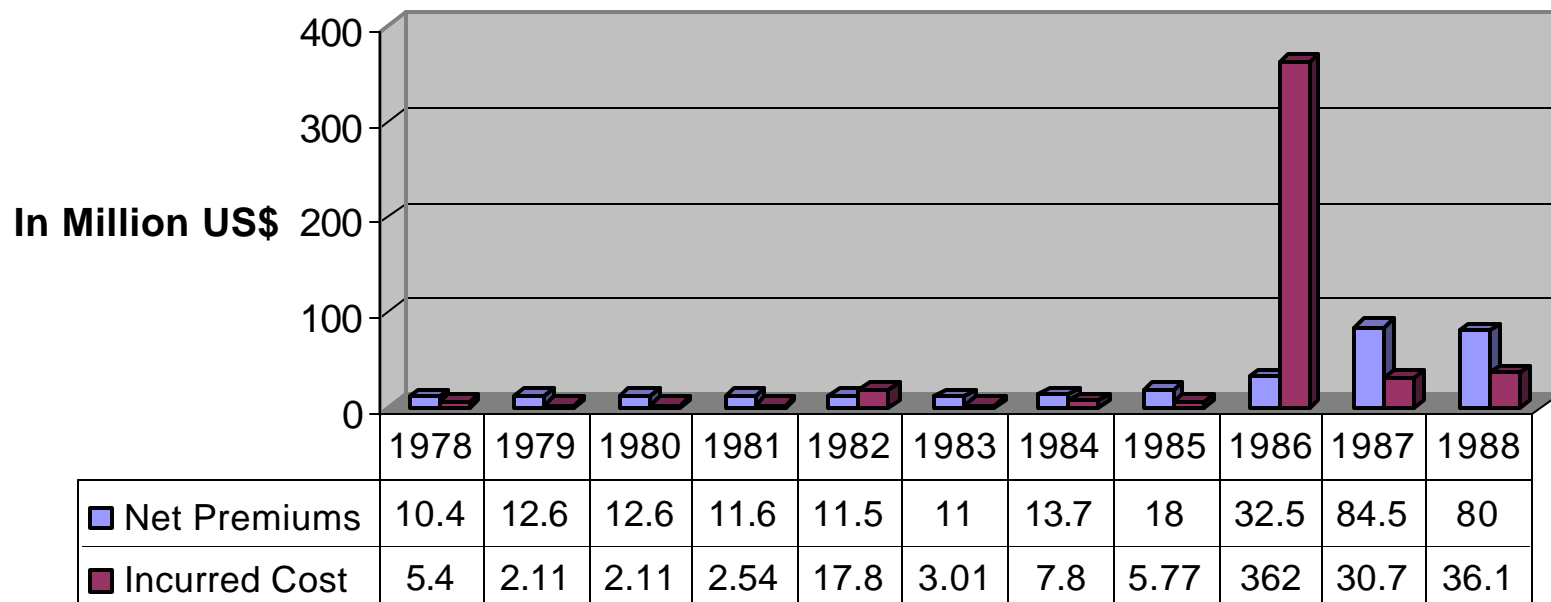
## ***Airline Incurred Cost***

- Marketing of disaster (Impact on reputation).
  - Traveling Public (Airline avoidance).
  - Aviation Authorities (Audits, etc.).
- Out of service cost.
- Loss of company knowledge, experience.
- Increased insurance premium.



## ***Increased Cost of Insurance***

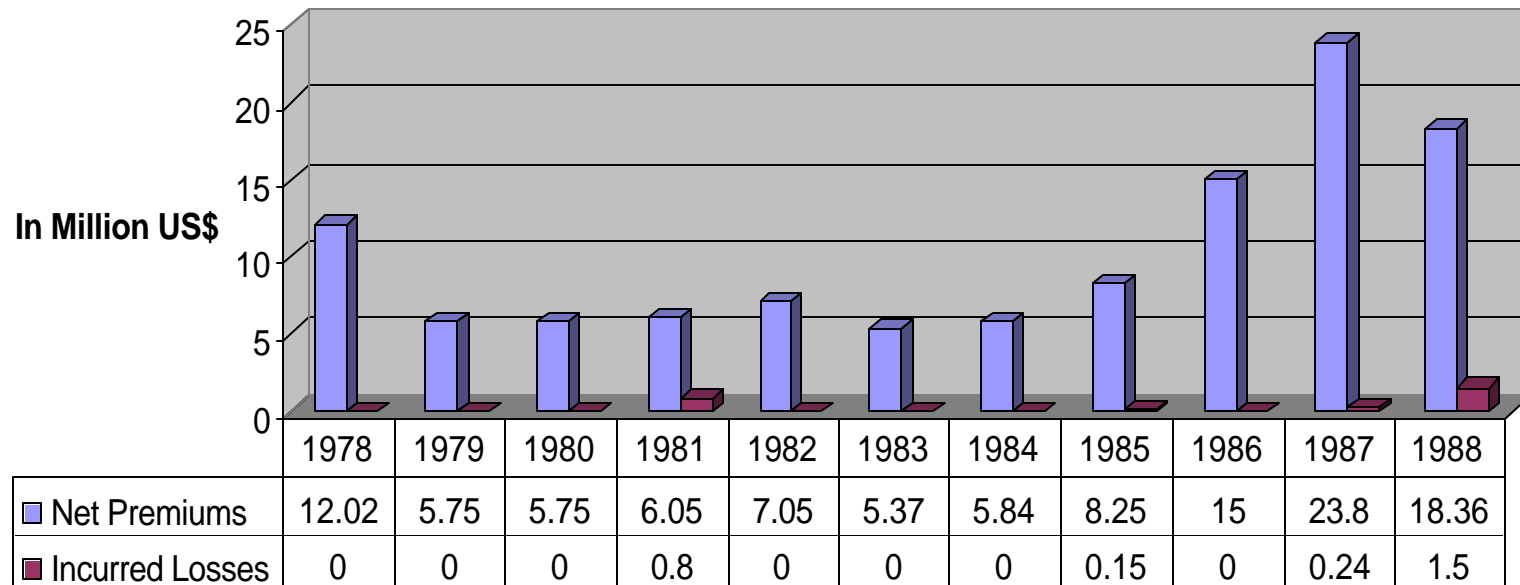
**Major Aviation Organization with High Loss Experience**





## ***Increased Cost of Insurance***

**Major Aviation Organization with Minimal Loss Experience**



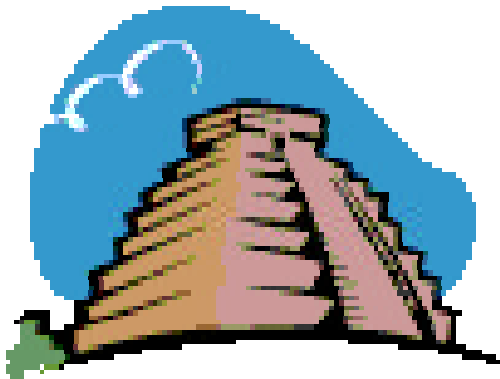


## ***Airline Incurred Cost***

- Marketing of disaster (Impact on reputation).
  - Traveling Public (Airline avoidance).
  - Aviation Authorities (Audits, etc.).
- Out of service cost.
- Loss of company knowledge, experience.
- Increased insurance premium.
- Accident investigation.
- Crises management.
- **Company morale!**
- ...



# Airline Cost of Unsafe Acts



Heinrich



Perceived cost  
distribution

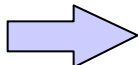


Probabilistic, risk  
based approach



# ***Structure of the Presentation***

**Justifying Safety** 

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## ***Conclusion***

- **Justifying Safety in proper economical terms is extremely difficult.**
- **Need to justify safety enhancements not just on the basis of accidents but on incidents as well!**
- **Need to measure & consider the Traveling Public Safety Perceptions and Attitudes.**
  - **Subjective & Objective Opinion Pools**
  - **Consider National Cultural differences`**

### **And remember:**

- **Public Concerns about Safety & Fear of Flying have considerably changed over the last years.**
  - **Safety is and will be a major detriment when choosing a certain airline or aircraft, at least in certain parts of the world.**